



FATAL1TY  
GAMING GEAR

ASRock®

# B450

## Gaming K4

User Manual

## 1.2 Specifications

- Platform**
- ATX Form Factor
  - Solid Capacitor design

- CPU**
- AMD AM4 Socket
  - Digi Power design
  - 9 Power Phase design
  - Supports 105W Water Cooling (Pinnacle Ridge); Supports 95W Water Cooling (Summit Ridge); Supports 65W Water Cooling (Raven Ridge)

- Chipset**
- AMD Promontory B450

- Memory**
- Dual Channel DDR4 Memory Technology
  - 4 x DDR4 DIMM Slots
  - AMD Ryzen series CPUs (Pinnacle Ridge) support DDR4 3200+(OC)/2933/2667/2400/2133 ECC & non-ECC, un-buffered memory\*
  - AMD Ryzen series CPUs (Summit Ridge) support DDR4 3200+(OC)/2933(OC)/2667/2400/2133 ECC & non-ECC, un-buffered memory\*
  - AMD Ryzen series CPUs (Raven Ridge) support DDR4 3200+(OC)/2933(OC)/2667/2400/2133 non-ECC, un-buffered memory\*

\* For Ryzen Series CPUs (Raven Ridge), ECC is only supported with PRO CPUs.

\* Please refer to Memory Support List on ASRock's website for more information. (<http://www.asrock.com/>)

\* Please refer to page 23 for DDR4 UDIMM maximum frequency support.

- Max. capacity of system memory: 64GB
- 15 $\mu$  Gold Contact in DIMM Slots

## Expansion Slot

### AMD Ryzen series CPUs (Summit Ridge and Pinnacle Ridge)

- 2 x PCI Express 3.0 x16 Slots (PCIE2: x16 mode; PCIE4: x4 mode)\*

### AMD Ryzen series CPUs (Raven Ridge)

- 2 x PCI Express 3.0 x16 Slots (PCIE2: x8 mode; PCIE4: x4 mode)\*

\* Supports NVMe SSD as boot disks

\* If M2\_1 is occupied, PCIE4 will be disabled.

- 4 x PCI Express 2.0 x1 Slots
- Supports AMD Quad CrossFireX™ and CrossFireX™\*\*

\*\* This feature is only supported with Ryzen Series CPUs (Summit Ridge, Pinnacle Ridge and Raven Ridge).

## Graphics

- **Integrated AMD Radeon™ Vega Series Graphics in Ryzen Series APU\***

\* Actual support may vary by CPU

- DirectX 12, Pixel Shader 5.0
- Max. shared memory 2GB
- Three graphics output options: D-Sub, HDMI and DisplayPort 1.2
- Supports Triple Monitor
- Supports HDMI with max. resolution up to 4K x 2K (4096x2160) @ 24Hz / (3840x2160) @ 30Hz
- Supports DisplayPort 1.2 with max. resolution up to 4K x 2K (4096x2160) @ 60Hz
- Supports D-Sub with max. resolution up to 1920x1200 @ 60Hz
- Supports Auto Lip Sync, Deep Color (12bpc), xvYCC and HBR (High Bit Rate Audio) with HDMI Port (Compliant HDMI monitor is required)
- Supports HDCP with HDMI and DisplayPort 1.2 Ports
- Supports 4K Ultra HD (UHD) playback with HDMI and DisplayPort 1.2 Ports

## Audio

- 7.1 CH HD Audio with Content Protection (Realtek ALC892 Audio Codec)
- \* To configure 7.1 CH HD Audio, it is required to use an HD front panel audio module and enable the multi-channel audio feature through the audio driver.
  - Premium Blu-ray Audio support
  - Supports Surge Protection
  - ELNA Audio Caps
  - PCB Isolate Shielding
  - Individual PCB Layers for R/L Audio Channel
  - Supports Creative SoundBlaster Cinema5

## LAN

- PCIE x1 Gigabit LAN 10/100/1000 Mb/s
- Realtek RTL8111H
- Supports Wake-On-LAN
- Supports Lightning/ESD Protection
- Supports Energy Efficient Ethernet 802.3az
- Supports PXE

## Rear Panel I/O

- 1 x PS/2 Mouse/Keyboard Port
- 1 x D-Sub Port
- 1 x HDMI Port
- 1 x DisplayPort 1.2
- 2 x USB 2.0 Ports (Supports ESD Protection)
- \* 1 x FatalIty Mouse Port (USB 2.0) is included
- 1 x USB 3.1 Gen2 Type-A Port (10 Gb/s) (Supports ESD Protection)
- 1 x USB 3.1 Gen2 Type-C Port (10 Gb/s) (Supports ESD Protection)
- 4 x USB 3.1 Gen1 Ports (Supports ESD Protection)
- 1 x RJ-45 LAN Port with LED (ACT/LINK LED and SPEED LED)
- HD Audio Jacks: Line in / Front Speaker / Microphone

**Storage**

- 4 x SATA3 6.0 Gb/s Connectors, support RAID (RAID 0, RAID 1 and RAID 10), NCQ, AHCI and Hot Plug\*
  - 2 x SATA3 6.0 Gb/s Connectors by ASMedia ASM1061, support NCQ, AHCI and Hot Plug
- \* M2\_2, SATA3\_3 and SATA3\_4 share lanes. If either one of them is in use, the others will be disabled.
- 1 x Ultra M.2 Socket (M2\_1), supports M Key type 2242/2260/2280 M.2 PCI Express module up to Gen3 x4 (32 Gb/s) (with Summit Ridge, Raven Ridge and Pinnacle Ridge)\*\*
  - 1 x M.2 Socket (M2\_2), supports M Key type 2230/2242/2260/2280/22110 M.2 SATA3 6.0 Gb/s module and M.2 PCI Express module up to Gen3 x2 (16 Gb/s) \*\*
- \*\* If M2\_1 is occupied, PCIE4 will be disabled.  
 \*\* Supports NVMe SSD as boot disks  
 \*\* Supports ASRock U.2 Kit

**Connector**

- 1 x COM Port Header
  - 1 x TPM Header
  - 1 x Power LED and Speaker Header
  - 1 x RGB LED Header
- \* Supports in total up to 12V/3A, 36W LED Strip
- 1 x Addressable LED Header
- \* Supports in total up to 5V/3A, 15W LED Strip
- 1 x AMD Fan LED Header
- \*The AMD Fan LED Header supports LED strips of maximum load of 3A (36W) and length up to 2.5M.
- 1 x CPU Fan Connector (4-pin)
- \* The CPU Fan Connector supports the CPU fan of maximum 1A (12W) fan power.
- 1 x CPU/Water Pump Fan Connector (4-pin) (Smart Fan Speed Control)
- \* The CPU/Water Pump Fan supports the water cooler fan of maximum 2A (24W) fan power.
- 3 x Chassis/Water Pump Fan Connectors (4-pin) (Smart Fan Speed Control)
- \* The Chassis/Water Pump Fan supports the water cooler fan of maximum 2A (24W) fan power.

\* CPU\_FAN2/WP, CHA\_FAN1/WP, CHA\_FAN2/WP and CHA\_FAN3/WP can auto detect if 3-pin or 4-pin fan is in use.

- 1 x 24 pin ATX Power Connector
- 1 x 8 pin 12V Power Connector
- 1 x Front Panel Audio Connector
- 2 x USB 2.0 Headers (Support 4 USB 2.0 ports) (Supports ESD Protection)
- 1 x USB 3.1 Gen1 Header (Supports 2 USB 3.1 Gen1 ports) (Supports ESD Protection)

### **BIOS Feature**

- AMI UEFI Legal BIOS with multilingual GUI support
- Supports “Plug and Play”
- ACPI 5.1 compliance wake up events
- Supports jumperfree
- SMBIOS 2.3 support
- DRAM Voltage multi-adjustment

### **Hardware Monitor**

- Temperature Sensing: CPU, MB
- Fan Tachometer: CPU, CPU/Water Pump, Chassis/Water Pump Fans
- Quiet Fan (Auto adjust chassis fan speed by CPU temperature): CPU, CPU/Water Pump, Chassis/Water Pump Fans
- Fan Multi-Speed Control: CPU, CPU/Water Pump, Chassis/Water Pump Fans
- Voltage monitoring: +12V, +5V, +3.3V, Vcore

### **OS**

- Microsoft® Windows® 10 64-bit

### **Certifica- tions**

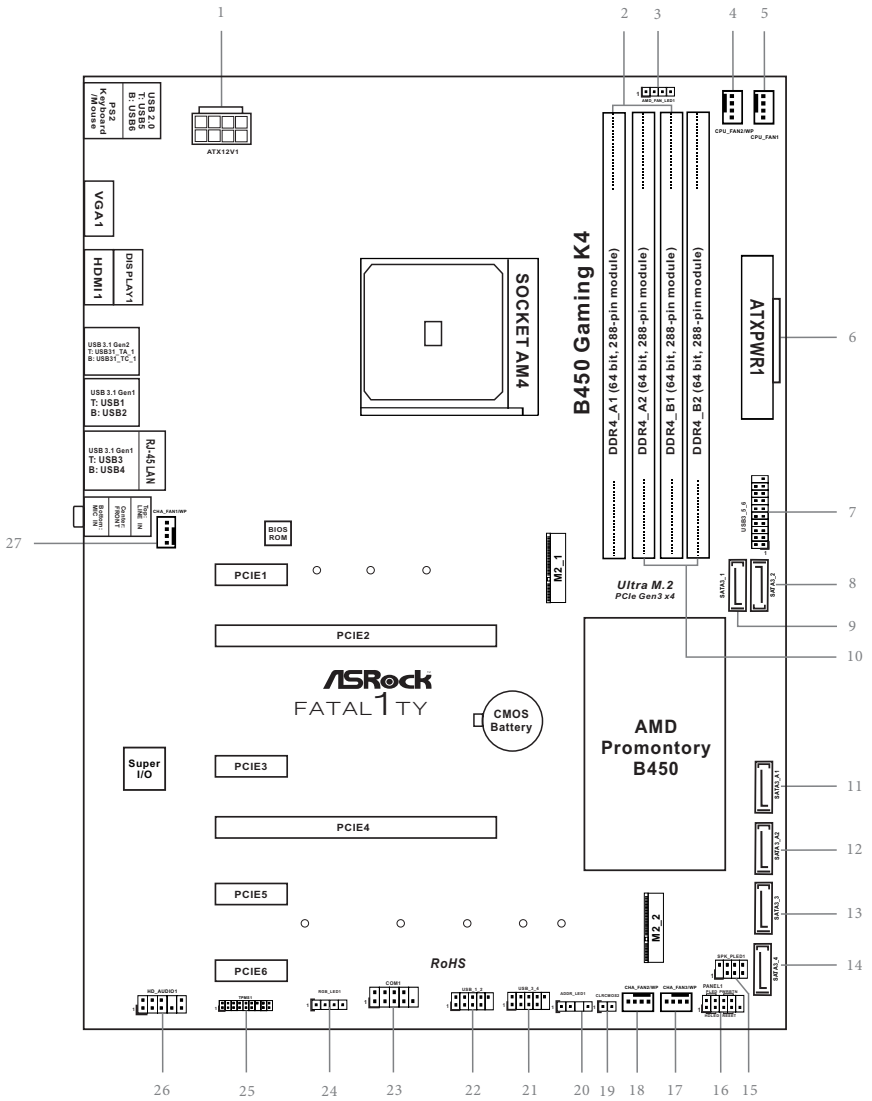
- FCC, CE
- ErP/EuP ready (ErP/EuP ready power supply is required)

\* For detailed product information, please visit our website: <http://www.asrock.com>



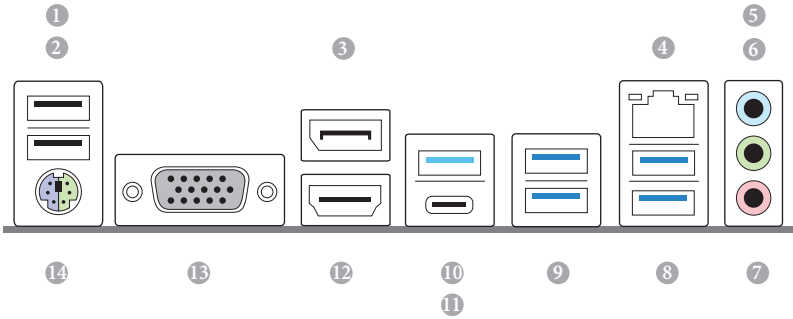
*Please realize that there is a certain risk involved with overclocking, including adjusting the setting in the BIOS, applying Untied Overclocking Technology, or using third-party overclocking tools. Overclocking may affect your system's stability, or even cause damage to the components and devices of your system. It should be done at your own risk and expense. We are not responsible for possible damage caused by overclocking.*

### 1.3 Motherboard Layout



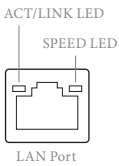
No.	Description
1	ATX 12V Power Connector (ATX12V1)
2	2 x 288-pin DDR4 DIMM Slots (DDR4_A1, DDR4_B1)
3	AMD Fan LED Header (AMD_FAN_LED1)
4	CPU Fan / Waterpump Fan Connector (CPU_FAN2/WP)
5	CPU Fan Connector (CPU_FAN1)
6	ATX Power Connector (ATXPWR1)
7	USB 3.1 Gen1 Header (USB3_5_6)
8	SATA3 Connector (SATA3_2)
9	SATA3 Connector (SATA3_1)
10	2 x 288-pin DDR4 DIMM Slots (DDR4_A2, DDR4_B2)
11	SATA3 Connector (SATA3_A1)
12	SATA3 Connector (SATA3_A2)
13	SATA3 Connector (SATA3_3)
14	SATA3 Connector (SATA3_4)
15	Power LED and Speaker Header (SPK_PLED1)
16	System Panel Header (PANEL1)
17	Chassis Fan / Waterpump Fan Connector (CHA_FAN3/WP)
18	Chassis Fan / Waterpump Fan Connector (CHA_FAN2/WP)
19	Clear CMOS Jumper (CLRCMOS2)
20	Addressable LED Header (ADDR_LED1)
21	USB 2.0 Header (USB_3_4)
22	USB 2.0 Header (USB_1_2)
23	COM Port Header (COM1)
24	RGB LED Header (RGB_LED1)
25	TPM Header (TPMS1)
26	Front Panel Audio Header (HD_AUDIO1)
27	Chassis Fan / Waterpump Fan Connector (CHA_FAN1/WP)

## 1.4 I/O Panel



No.	Description	No.	Description
1	Fatal1ty Mouse Port (USB5)	8	USB 3.1 Gen1 Ports (USB3_34)
2	USB 2.0 Port (USB6)	9	USB 3.1 Gen1 Ports (USB3_12)
3	DisplayPort 1.2	10	USB 3.1 Gen2 Type-A Port (USB31_TA_1)
4	LAN RJ-45 Port*	11	USB 3.1 Gen2 Type-C Port (USB31_TC_1)
5	Line In (Light Blue)**	12	HDMI Port
6	Front Speaker (Lime)**	13	D-Sub Port
7	Microphone (Pink)**	14	PS/2 Mouse/Keyboard Port

\* There are two LEDs on each LAN port. Please refer to the table below for the LAN port LED indications.



Activity / Link LED		Speed LED	
Status	Description	Status	Description
Off	No Link	Off	10Mbps connection
Blinking	Data Activity	Orange	100Mbps connection
On	Link	Green	1Gbps connection